Kramer Electronics, Ltd.

USER MANUAL

Model:

FC-46xl

HDMI Audio De-Embedder

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer DigiTOOLS® **FC-46xl** *HDMI*[2] *Audio De-Embedder* which incorporates HDMI® technology and is ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

The package includes the following items:

- **FC-46xl** HDMI Audio De-Embedder
- Power adapter[3] (5V DC output)
- This user manual[4]

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables[5]

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products
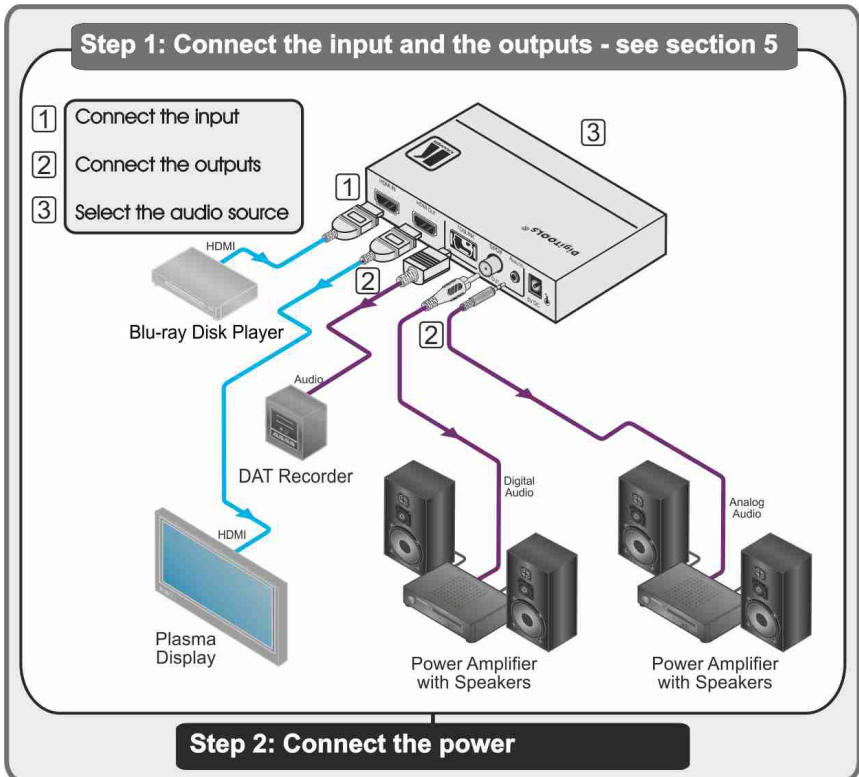
2 High-Definition Multimedia Interface

3 As an option, you can purchase the Kramer VA-100P-5 10 Port Universal 5-Volt Power Supply, enabling you to supply power to up to 10 Kramer devices that require 5V DC

4 Download up-to-date Kramer user manuals from our Web site at http://www.kramerelectronics.com

5 The complete list of Kramer cables is available at http://www.kramerelectronics.com

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

3 Overview

The **FC-46xl** *HDMI Audio De-Embedder* accepts an HDMI input signal, de-embeds the audio signal from either the HDMI input or the audio return channel (HDMI output), and transfers the audio signal simultaneously to:

- The HDMI output
- A digital audio S/PDIF output
- An optical TOSLINK® audio output
- An analog output

Note: When there are more than two channels of audio (for example, 5.1), it is available only on the digital outputs and the analog output is disabled.

In particular, the **FC-46xl**:

- Lets you connect your HDMI source to an HDMI display and enjoy high quality digital audio at the same time (for example, when using a high quality AV receiver)
- Features I-EDIDPro™ Kramer Intelligent EDID Processing™ an Intelligent EDID handling and processing algorithm that ensures Plug and Play operation for HDMI systems
- Features input format auto detection; digital RGB or YPbPr
- Supports resolutions up to 1080p@60Hz
- Supports deep color up to 36 bits per pixel at 1080p
- Is 5V DC fed
- Is HDCP compliant

3.1 About HDCP

The High-Bandwidth Digital Content Protection (HDCP) standard (developed by Intel), protects digital video and audio signals transmitted over DVI or HDMI connections between two HDCP-enabled devices to eliminate the reproduction of copyrighted material. To protect copyright holders (such as movie studios) from having their programs copied and shared, the HDCP standard provides for the secure and encrypted transmission of digital signals.

3.2 Defining EDID

The Extended Display Identification Data (EDID[1]) is a data set provided by a display, to describe its capabilities to an HDMI source. The EDID enables the **FC-46xl** to identify what kind of display is connected to the output. The

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1 Defined by a standard published by the Video Electronics Standards Association (VESA)

EDID includes the manufacturer's name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

3.3 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed, all-digital[1] audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality. Note that Kramer Electronics Limited is an HDMI Adopter[2] and an HDCP Licensee[3]. In particular, HDMI[4]:

- Provides a simple[5] interface between any audio/video source, such as a set-top box, Blu-ray Disc player, or A/V receiver and video monitor, such as a digital flat LCD/plasma television (DTV), over a single[6] cable
- Supports standard, enhanced, high-definition video, and multi-channel digital audio[7] on a single cable
- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed, High Definition digital video via a single cable[8] with a user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a Blu-ray Disc player) and the digital television, enabling new functionality such as automatic configuration and one-button play

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1 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

2 See http://www.hdmi.org/learningcenter/adopters_founders.aspx

3 See http://www.digital-cp.com/about_dcp/list

4 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

5 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

6 HDMI technology has been designed to use standard copper cable construction at up to 15m

7 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

8 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

KRAMER: SIMPLE CREATIVE TECHNOLOGY

HDMI has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p@60Hz), as well as standard definition formats such as NTSC or PAL.

3.4 Recommendations for Best Performance

For best performance we recommend that you:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your **FC-46xl** in a location free from moisture and away from excessive sunlight and dust

Caution: No operator serviceable parts inside unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

4   Defining the FC-46xl HDMI Audio De-Embedder

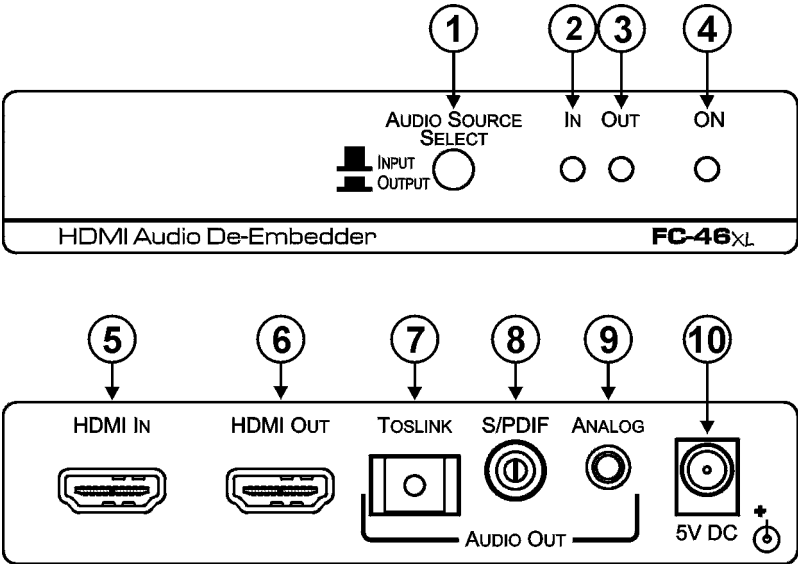Figure 1 and Table 1 define the **FC-46xl** *HDMI Audio De-Embedder.*

Figure 1: FC-46xl HDMI Audio De-Embedder Front and Rear Panel

Table 1: FC-46xl HMDI Audio De-Embedder Front and Rear Panel Features

#	Feature		Function
1	*AUDIO SOURCE SELECT* Button	*INPUT*	Release to select audio from HDMI IN
		OUTPUT	Press in to select audio from HDMI OUT TV audio return signal
2	*IN* LED		Lights to indicate signal presence at HDMI IN
3	*OUT* LED		Lights to indicate that an acceptor is connected to HDMI OUT
4	*ON* LED		Lights when the unit is powered on
5	*HDMI IN* Connector		Connect to the HDMI source
6	*HDMI OUT* Connector		Connect to the HDMI acceptor
7	*TOSLINK* Connector	*AUDIO OUT*	Connect to the digital audio acceptor
8	*S/PDIF* RCA Connector		
9	*ANALOG* 3.5 Mini Connector		
10	*5V DC*		+5V DC connector for powering the unit, center positive

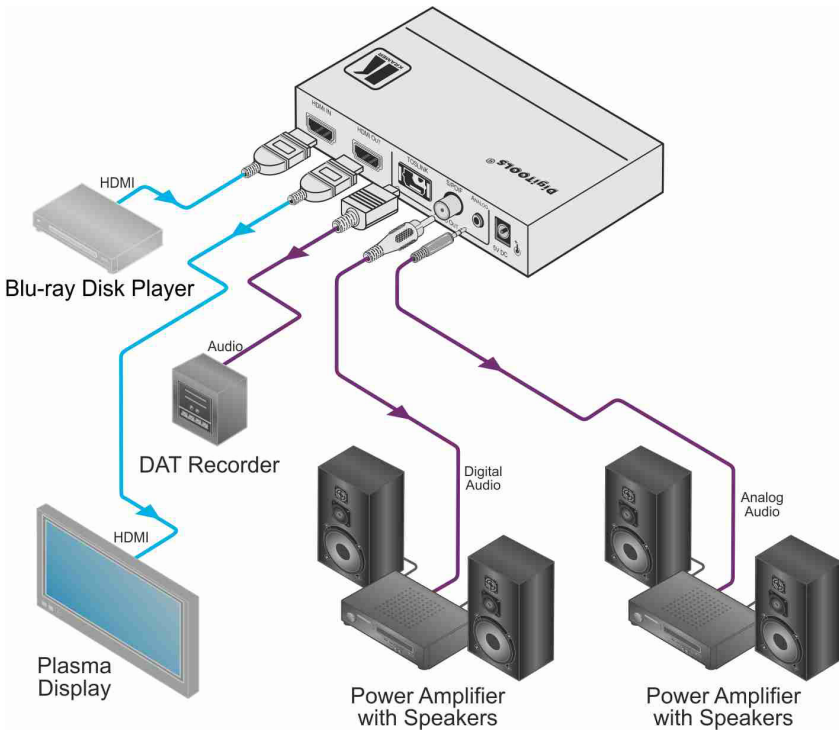# 5 Connecting the FC-46xl HDMI Audio De-Embedder

Figure 2: Connecting the FC-46xl HDMI Audio De-Embedder

To connect the FC-46xl as illustrated[1] in the example in [Figure 2](#):

1. Connect the HDMI source (for example, a Blu-ray Disc player) to the HDMI IN connector.

2. Connect the HDMI OUT connector to the HDMI acceptor (for example, a plasma display).

3. Connect the audio output(s) to the digital/analog audio acceptor(s), for example, power amplifier(s) or active speaker(s).

Note: The analog audio output is disabled when there are more than two channels (for example, 5.1) on the audio input.

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1 Switch off the power to each device before connecting it to your FC-46xl. After connecting your FC-46xl, switch on its power and then switch on the power to each device

4. Using the Audio Source Selector button, select the audio source to be either the HDMI input (button released, audio is taken from the Blu-ray Disc), or the HDMI output (button pressed in, audio is taken from the TV audio return signal).

5. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity (not illustrated in Figure 2).

6   Technical Specifications

Table 2 defines the technical specifications [1] of the **FC-46xl**.

Table 2: Technical Specifications of the FC-46xl HDMI Audio De-Embedder

INPUT:	HDMI Connector
OUTPUTS:	1 HDMI Connector 1 TOSLINK® optical digital audio connector 1 S/PDIF digital audio on an RCA connector 1 Analog audio on a 3.5 mm mini connector
OPERATION FREQUENCY:	Supports up to 2.25Gbps (1080p @60Hz) 36 bit Deep Color
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI [2], HDCP 1.4
CONTROLS:	Audio Source Select button
INDICATOR LEDS:	ON, IN, OUT
POWER SOURCE:	5V DC 600mA
DIMENSIONS:	12.4cm x 7cm x 2.4cm (4.9" x 2.8" x 0.94") W, D, H
WEIGHT:	0.4kg (0.88lbs) approx.
ACCESSORIES:	Power supply
OPTIONS:	Kramer 10-Port Universal 5V Power Supply VA-100P-5 RK-3T 19" Rack Adapter

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1 Specifications are subject to change without notice

2 Including audio return and deep color

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.

2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.

3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

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Kramer distributors at www.kramerelectronics.com
where updates to this user manual may be found.
We welcome your questions, comments, and feedback.

<table>
<tr><td>⚠
Caution</td><td>**Safety Warning**:
Disconnect the unit from the power supply before
opening/servicing.</td></tr>
</table>

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